



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,725	10/03/2003	Robert C. Lam	01170/00078	6124

43215 7590 11/15/2006
BORGWARNER INC.
PATENT DEPARTMENT
3850 HAMLIN ROAD
AUBURN HILLS, MI 48326-2872

EXAMINER

CHOI, PETER Y

ART UNIT	PAPER NUMBER
----------	--------------

1771

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

5

Office Action Summary	Application No. 10/678,725	Applicant(s) LAM, ROBERT C.	
	Examiner Peter Y. Choi	Art Unit 1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4,5,7,9 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,4,5,7,9 and 14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

NON-FINAL ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 1, 2006 has been entered.
2. The terminal disclaimers filed August 9, 2006, regarding prior patent No. 6,630,416 and pending Application Number 10/678,720, have been entered.
3. Applicant cancelled claims 1, 3, 6, 8, and 10-13. Applicant currently amended claims 2, 4, 5, 7, and 9. Applicant currently added claims 14-18. Only claims 2, 4, 5, 7, 9 and 14-18 are pending.
4. Rejection of claims 1-5, 7, and 9-13 under 35 U.S.C. 112, first paragraph, is withdrawn due to Applicant's amendment.
5. Rejections of claims 1-3, 7, and 9-13 under 35 U.S.C. 103(a) as anticipated by Bortz, and of claims 7 and 10-13 under 35 U.S.C. 103(a) as anticipated by Bortz in view of Lam, et al., are withdrawn due to Applicant's amendment. Claims 4, 5, and 14 are still rejected by Bortz.

Claim Objections

6. Claim 9 is objected to because of the following informalities: the word "silicone" in the phrase "at least one silicon resin" is missing an "e." Appropriate correction is required.
7. Claim 9 is objected to because the claim refers to "at least one silicone modified resin" and "at least one epoxy modified resin" where neither phrase is supported in the disclosure as

Art Unit: 1771

originally filed. "At least one silicone modified resin" is interpreted to indicate a resin modified by silicone and "at least one epoxy modified resin" is interpreted to indicate a resin modified by epoxy.

In the disclosure as originally filed, there is support for "at least one modified silicone resin" and "at least one modified epoxy resin" (paragraph 0047). For the purpose of examination at this time, Examiner will interpret the claim as the fibrous material impregnated with at least one modified silicone resin or at least one modified epoxy resin.

Appropriate corrections are required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 2, 4, 7, 9, 14-16, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Lam, U.S. Patent No. 6,001,750.

The Lam reference teaches a fibrous base material comprising a primary layer of less fibrillated aramid fibers, carbon particles, carbon fibers, phenolic novoloid fibers, and at least one filler material and optionally cotton fibers, and a secondary layer of carbon particles on at least one surface of the fibrous base material, wherein the fibrous base material is impregnated with a phenolic resin or a modified phenolic resin blend (Abstract). An embodiment of the fibrous based material comprises about 10 to about 50% by weight of less fibrillated aramid

Art Unit: 1771

fiber, about 5 to about 25% carbon fibers, about 0 to about 10% cotton fibers, about 0.5 to about 5% phenolic novoloid fibers, about 15 to about 35% by weight of filler material, and about 5 to about 20% by weight of carbon particles (column 10, lines 40-46). The total fiber percentage and the filler percentage read on the claimed ranges. The reference teaches air voids of at least about 50% and in certain embodiments at least about 60% or higher (column 8, lines 38-41).

Therefore, the limitations of independent claim 14 are met.

Regarding claim 2, the fibrous base material may comprise about 80% by weight fibers and about 20% by weight of filler as set forth above.

Regarding claim 4, the reference suggests that the fibrous base material is a nonwoven (Abstract).

Regarding claim 7, the fibrous base material may have an average pore diameter from about 2 to about 15 microns (column 8, lines 35-37).

Regarding claim 9, the fibrous base material may be impregnated with a phenolic or modified phenolic resin (column 7, lines 64-67).

Regarding claim 15, the fibers are less fibrillated aramid fibers (Abstract).

Regarding claim 16, the claimed less fibrillated aramid fiber percentage and filler percentage are within the percentage ranges disclosed in the reference as set forth above. Additionally, the claimed cotton fiber percentage and the carbon fiber percentage overlap the percentage ranges in the reference as set forth above as well. Since the claimed ranges are either disclosed within the reference or overlap the ranges disclosed in the reference, the reference is deemed to anticipate the claimed ranges.

Regarding claim 18, the fibrous base material includes about 40 to about 65% by weight of the resin which overlaps the claimed range (column 6, lines 29-32). Therefore, the reference is deemed to anticipate the claimed ranges.

10. Claims 2, 4, 7, 9, 14-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Lam, U.S. Patent No. 6,130,176.

The Lam reference teaches a fibrous base material comprising less fibrillated aramid fibers, carbon particles, cotton fibers carbon fibers, and at least one filler material, wherein the fibrous base material may be impregnated with a phenolic resin or a phenolic-base resin material (Abstract). An embodiment of the fibrous based material comprises about 10 to about 50% by weight of less fibrillated aramid fiber, about 2 to about 15% carbon fibers, about 5 to about 20% cotton fibers, about 10 to about 35% by weight of filler material, and about 10 to about 35% by weight of carbon particles (column 8, line 63 to column 9, line 2). The total fiber percentage and the filler percentage read on the claimed ranges. The reference teaches air voids of at least about 50% and in certain embodiments at least about 60% or higher (column 7, lines 46-50).

Therefore, the limitations of independent claim 14 are met.

Regarding claim 2, the fibrous base material may comprise about 80% by weight fibers and about 20% by weight of filler as set forth above.

Regarding claim 4, the reference suggests that the fibrous base material is a nonwoven (Abstract).

Regarding claim 7, the fibrous base material may have an average pore diameter from about 2 to about 15 microns (column 7, lines 44-46).

Regarding claim 9, the fibrous base material may be impregnated with a phenolic or modified phenolic resin (column 7, lines 64-67).

Regarding claim 15, the fibers are less fibrillated aramid fibers (Abstract).

Regarding claim 16, the claimed less fibrillated aramid fiber percentage, the cotton fiber percentage, and filler percentages are within the percentage ranges disclosed in the reference as set forth above. Additionally, the claimed carbon fiber percentage overlaps the percentage range in the reference as set forth above as well. Since the claimed ranges are either disclosed within the reference or overlap the ranges disclosed in the reference, the reference is deemed to anticipate the claimed ranges.

Regarding claim 17, the claimed less fibrillated aramid fiber percentage and filler percentage are within the percentage ranges disclosed in the reference as set forth above. Additionally, the claimed cotton fiber percentage and the carbon fiber percentage overlap the percentage ranges in the reference as set forth above as well. Since the claimed ranges are either disclosed within the reference or overlap the ranges disclosed in the reference, the reference is deemed to anticipate the claimed ranges.

Regarding claim 18, the fibrous base material includes about 40 to about 65% by weight of the resin which overlaps the claimed range (column 5, lines 42-45). Therefore, the reference is deemed to anticipate the claimed ranges.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 4, 5, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bortz, U.S. Patent No. 5,646,076.

The Bortz reference teaches friction material composites comprising a nonwoven textile component impregnated by a polymer resin (Abstract and column 5, lines 14-17). Regarding claim 14, the nonwoven component contains staple fibers (column 5, lines 4-9) formed into a nonwoven carded web. In one embodiment, filler may be dispersed on or coformed with the carded web in proportions less than 50% by weight and preferably less than 40% by weight of the resulting combination of fibers and fillers (column 5, lines 25-32), which encompasses the range claimed by Applicant. Therefore, it would have been obvious for one of ordinary skill in the art to optimize the amount of the particulate material within the disclosed range. *In re Bosch*, 205 USPQ 215 (CCPA 1980). The reference further teaches a void volume of more than 30% and preferably more than 50% (column 10, lines 54-64).

The reference does not specifically disclose a fiber percentage for the nonwoven textile component. The reference does teach that a carrier or needlable non-carbonized or graphitized fiber type is included in a certain embodiment comprising greater than 20% and preferably greater than approximately 30% by weight of the total fibers used (column 7, lines 21-35) which reads on the claimed fiber range. Additionally, since the intended environment for the friction material predicates the fibrous composition (column 6, line 69 to column 7), and the intended environments or uses are varied, the proportions appear to be within the ordinary level of skill of

one in the art, whom the reference indicates will determine functional and preferred ranges. *In re Aller*, 105 USPQ 233 (CCPA 1955). Therefore, the limitations of independent claim 14 are met.

Regarding claim 4, the friction material is a nonwoven as set forth above.

Regarding claim 5, the reference mentions that woven forms of the textile material are known, although not preferred by some (column 2, lines 41-53). An embodiment need not be preferred in order to meet claim limitations.

Response to Arguments

13. In view of Applicant's amendments, the prior rejections are withdrawn. Applicant's arguments with respect to the rejection of claims 1-3, 7, and 9-13 under Bortz have been considered but are moot in view of the further prior art search by the current Examiner and subsequent new grounds of rejection. Applicant's arguments are collectively inapplicable at this time. However, as to Applicant's central arguments that Bortz is silent as to the amount of fiber and filler used, in addition to not disclosing the void volume claimed, Examiner respectfully disagrees. The only limitations claimed in independent claim 14 require about 75% to 85% fibers, about 15% to 25% fillers, an average voids volume from about 50% to about 85%, and impregnating the fibrous material with a resin. As Bortz discloses, the friction material contains only fibers and optionally fillers, impregnated by a polymer resin (Examples I-V, column 12, line 3 to column 14, line 50; column 5, lines 25-32; column 5, lines 14-17).

The carrier or needlable non-carbonized or graphitized fiber type is included in a certain embodiment comprising greater than 20% and preferably greater than approximately 30% by weight of the total fibers used (column 7, lines 21-35) which reads on the claimed fiber range.

Art Unit: 1771

The filler may be dispersed on or coformed with the carded web in proportions less than 50% by weight and preferably less than 40% by weight of the resulting combination of fibers and fillers (column 5, lines 25-32), which encompasses the range claimed by Applicant. The reference further teaches a void volume of more than 30% and preferably more than 50% (column 10, lines 54-64). The Bortz reference teaches friction material composites comprising a nonwoven textile component impregnated by a polymer resin (Abstract and column 5, lines 14-17).

Terminal Disclaimer

14. The terminal disclaimer filed on August 9, 2006, disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Application No. 10/678/720 and U.S. Patent No. 6,630,416 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Conclusion

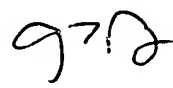
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Y. Choi whose telephone number is (571) 272-6730. The examiner can normally be reached on Monday - Friday, 08:00 - 15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1771

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


PYC


ANDREW PIZIALI
PRIMARY EXAMINER